

iv. **Nitrite**

- (a) **WQO.** DDW has adopted a Primary MCL for nitrite of 1 mg/L, which is protective of the Basin Plan's chemical constituent objective. Order R5-2013-0094-01 included effluent limitations for nitrite based on the Primary MCL.
- (b) **RPA Results.** For priority pollutants, the SIP dictates the procedures for conducting the RPA. Nitrite is not a priority pollutant. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used its judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent. For conducting the RPA, U.S. EPA recommends using a mass-balance approach to determine the expected critical downstream receiving water concentration using a steady-state approach¹⁴. This downstream receiving water concentration is then compared to the applicable water quality objectives to determine if the discharge has reasonable potential to cause or contribute to an in-stream excursion. This approach allows assimilative capacity and dilution to be factored into the RPA. This U.S. EPA recommended approach has been used for nitrite. The critical downstream receiving water concentration is calculated using the following equation:

$$C_r = \frac{Q_s C_s + Q_d C_d}{Q_s + Q_d}$$

Where:

Q_s = Critical stream flow (1Q10) for acute criteria, (7Q10) for chronic criteria, and harmonic mean flow for human health criteria

Q_d = Critical effluent flow from discharge flow data (maximum permitted discharge)

C_s = Critical upstream pollutant concentration

C_d = Critical effluent pollutant concentration

C_r = Critical downstream receiving water pollutant concentration

Although the Primary MCL for nitrite is a human health-based criterion, it is designed to be protective of human health for short-term exposure. Therefore, a critical stream flow (Q_s) of 1,236 MGD (7Q10) was used for the RPA for nitrite. The critical effluent flow, Q_d , is 10.5 MGD, which is the maximum permitted flow allowed in this Order. The critical effluent pollutant concentration, C_d , was determined using statistics recommended in the TSD for statistically calculating the projected maximum effluent concentration (i.e., Table 3-2 of the TSD using the 95% probability basis and 95% confidence level).

The maximum observed effluent nitrite concentration was 1.35 mg/L based on 161 samples collected between June 2014 and May 2017. Nitrite was not detected in the upstream receiving water based on four samples collected by the Discharger between June 2014 and May 2017,

¹⁴ U.S. EPA NPDES Permit Writers' Course (EPA 833-B-97-001 rev. October 2009)

using a method detection limit (MDL) of 0.05 mg/L. For the purposes of the RPA calculations below, a value of 0.05 mg/L was used to represent the critical upstream pollutant concentration, C_s . Using the procedures described above, the critical downstream nitrite concentration is calculated as follows:

$$Q_s = 798 \text{ MGD}$$

$$Q_d = 10.5 \text{ MGD}$$

$$C_s = 0.05 \text{ mg/L}$$

$$C_d = 0.88 \text{ mg/L}$$

$$C_r = \frac{(798 \text{ MGD} \times 0.05 \text{ mg/L}) + (10.5 \text{ MGD} \times 0.88 \text{ mg/L})}{(798 \text{ MGD} + 10.5 \text{ MGD})} = 0.061 \text{ mg/L}$$

The critical downstream receiving water nitrite concentration, C_r , is 0.061 mg/L, which does not exceed the Primary MCL. Therefore, the discharge does not have reasonable potential for nitrite and the WQBEL for nitrite has not been retained in this Order. Removal of this effluent limitation is in accordance with federal anti-backsliding regulations (see section IV.D.3 of the Fact Sheet).

v. **Salinity**

- (a) **WQO.** The Basin Plan contains a chemical constituent objective that incorporates state MCLs, contains a narrative objective, and contains numeric water quality objectives for certain specified water bodies for electrical conductivity, total dissolved solids, sulfate, and chloride. The U.S. EPA Ambient Water Quality Criteria for Chloride recommends acute and chronic criteria for the protection of aquatic life. There are no U.S. EPA water quality criteria for the protection of aquatic life for electrical conductivity, total dissolved solids, and sulfate.

Table F-13. Salinity Water Quality Criteria/Objectives

Parameter	Basin Plan Objective	Agricultural WQ Objective ¹	Secondary MCL ²	U.S. EPA NAWQC	Effluent	
					Average ³	Maximum
EC (µmhos/cm) or TDS (mg/L)	150 ⁴	Varies	EC: 900, 1600, 2200 or TDS: 500, 1000, 1500	N/A	673 or 328	960 or 400
Sulfate (mg/L)	N/A	Varies	250, 500, 600	N/A	35	53
Chloride (mg/L)	N/A	Varies	250, 500, 600	860 1-hr 230 4-day	64	99

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Parameter	Basin Plan Objective	Agricultural WQ Objective ¹	Secondary MCL ²	U.S. EPA NAWQC	Effluent	
					Average ³	Maximum

¹ Narrative chemical constituent objective of the Basin Plan. Procedures for establishing the applicable numeric limitation to implement the narrative objective can be found in the Policy for Application of Water Quality Objectives, Section 4.2.2.1.9 of the Basin Plan. However, the Basin Plan does not require improvement over naturally occurring background concentrations. In cases where the natural background concentration of a particular constituent exceeds an applicable water quality objective, the natural background concentration will be considered to comply with the objective.

² The Secondary MCL's are for protection of public welfare and are stated as a recommended level, upper level, and a short-term maximum level.

³ Maximum calendar annual average.

⁴ Only applies to electrical conductivity. Electrical conductivity shall not exceed 150 micromhos/cm (90 percentile) in well-mixed waters of the Feather River based on a 10-year rolling average.

- (1) **Chloride.** The Secondary MCL for chloride is 250 mg/L, as a recommended level, 500 mg/L as an upper level, and 600 mg/L as a short-term maximum.
- (2) **Electrical Conductivity or Total Dissolved Solids.** The Secondary MCL for EC is 900 µmhos/cm as a recommended level, 1600 µmhos/cm as an upper level, and 2200 µmhos/cm as a short-term maximum, or when expressed as TDS is 500 mg/L as a recommended level, 1000 mg/L as an upper level, and 1500 mg/L as a short-term maximum. The Basin Plan includes a water quality objective that electrical conductivity (at 25°C) "[s]hall not exceed 150 micromhos/cm (90 percentile) in well-mixed waters of the Feather River." The Basin Plan objective for electrical conductivity is applied as a 10-year rolling average.
- (3) **Sulfate.** The Secondary MCL for sulfate is 250 mg/L as a recommended level, 500 mg/L as an upper level, and 600 mg/L as a short-term maximum.

(b) **RPA Results**

- (1) **Chloride.** Chloride concentrations in the effluent ranged from 51.8 mg/L to 98.9 mg/L, with maximum observed calendar year annual average concentration of 64 mg/L based on 151 samples collected in calendar years 2014 through 2016. These levels do not exceed the Secondary MCL. Background concentrations in the Feather River ranged from 1.25 mg/L to 1.83 mg/L based on four samples collected by the Discharger from June 2014 to May 2017.
- (2) **Electrical Conductivity or Total Dissolved Solids.** A review of the Discharger's monitoring reports shows a maximum observed calendar year annual average effluent electrical conductivity of 673 µmhos/cm, with a range from 500 µmhos/cm to 960 µmhos/cm based on 1,089 samples collected in calendar years 2014 through 2016. The maximum observed annual average background electrical conductivity was 108 µmhos/cm based on 161 samples collected in calendar years 2014 through 2016. These data show that some limited assimilative capacity exists in the Feather River for electrical conductivity. Based on the maximum annual average electrical conductivity of the effluent, the table below summarizes the projected downstream Feather River electrical conductivity concentrations

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using a mass-balance equation and electrical conductivity and flow data for the Facility, the Linda County Water District WWTP, and the Feather River, which indicates that compliance with the Basin Plan electrical conductivity objective will be achieved.

Table F-14. Feather River Electrical Conductivity Concentrations

EC _{YC} (µmhos/cm)	673
Q _{YC} (MGD)	10.5
EC _{LC} (µmhos/cm)	608
Q _{LC} (MGD)	6.7
EC _{FR Upstream} (µmhos/cm)	108
Q _{FR Upstream} (MGD)	2,327
EC _{FR Downstream} ¹ (µmhos/cm)	112

¹ EC_{FR Downstream} = ((EC_{YC}Q_{YC}) + (EC_{LC}Q_{LC}) + (EC_{FR}Q_{FR})) / (Q_{YC} + Q_{LC} + Q_{FR}), where:

EC_{YC} = Maximum observed calendar year annual average effluent concentration

Q_{YC} = Flow limitation for the Facility

EC_{LC} = Annual average effluent concentration from the Linda County Water District WWTP, as reported in Order R5-2017-0094

Q_{LC} = Flow limitation for the Linda County Water District WWTP in Order R5-2017-0094

EC_{FR Upstream} = Maximum observed calendar year annual average upstream receiving water concentration

Q_{FR} = Harmonic mean flow of the Feather River

The projected downstream electrical conductivity concentration, which combines the Facility and Linda County Water District WWTP discharges, of 112 µmhos/cm is less than the Basin Plan objective of 150 µmhos/cm (90 percentile) in well-mixed waters of the Feather River. Therefore, electrical conductivity in the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan objective.

The maximum observed calendar year annual average total dissolved solids effluent concentration was 328 mg/L with concentrations ranging from 220 mg/L to 400 mg/L, based on 157 samples collected between in calendar years 2014 through 2016. These levels do not exceed the Secondary MCL. The background receiving water total dissolved solids ranged from 20 mg/L to 55 mg/L based on four samples collected between June 2014 and May 2017.

- (3) **Sulfate.** Sulfate concentrations in the effluent ranged from 14.5 mg/L to 52.9 mg/L, with a maximum observed calendar year annual average of 35 mg/L. These levels do not exceed the Secondary MCL. Background concentrations in the Feather River ranged from 2.07 mg/L to 3.05 mg/L based on four samples collected between June 2014 and May 2017.

Based on the relatively low reported salinity, the discharge does not have reasonable potential to cause or contribute to an in-stream excursion of water quality objectives for salinity, and this Order does not contain effluent limitations for salinity. However, since the Discharger discharges to Feather River, a tributary of the Sacramento River and eventually the Sacramento-San Joaquin Delta, of additional concern is the salt contribution to Delta waters. Allowing the Discharger to increase its current salt loading may be contrary to the Region-wide effort to address

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salinity in the Central Valley. Therefore, this Order contains a provision that the salinity evaluation and minimization plan shall be reviewed and updated if the annual calendar year average for effluent electrical conductivity is greater than 800 $\mu\text{mhos/cm}$. If the plan is updated, it shall be submitted by 1 April following the calendar year in which the annual calendar year average for effluent electrical conductivity was exceeded.

In order to ensure that the Discharger will continue to control the discharge of salinity, this Order includes a requirement to continue to implement the salinity evaluation and minimization plan. Water supply monitoring is also required to evaluate the relative contribution of salinity from the source water to the effluent.

- c. **Constituents with Reasonable Potential.** The Central Valley Water Board finds that the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for ammonia, chlorine residual (Discharge Point 001 only), copper, dichlorobromomethane, mercury, nitrate plus nitrite, pH, settleable solids (Discharge Point 001 only), and total coliform organisms. WQBEL's for these constituents are included in this Order. A summary of the RPA is provided in Attachment G, and a detailed discussion of the RPA for each constituent is provided below.

i. **Ammonia**

- (a) **WQO.** The 1999 U.S. EPA National Ambient Water Quality Criteria (NAWQC) for the protection of freshwater aquatic life for total ammonia (the "1999 Criteria"), recommends acute (1-hour average; criteria maximum concentration or CMC) standards based on pH and chronic (30-day average; criteria continuous concentration or CCC) standards based on pH and temperature. U.S. EPA also recommends that no 4-day average concentration should exceed 2.5 times the 30-day CCC.

The U.S. EPA has published national recommended water quality criteria for the protection of aquatic life from the toxic effects of ammonia in freshwater (the "2013 Criteria")¹⁵. The 2013 Criteria is an update to U.S. EPA's 1999 Criteria and varies based on pH and temperature. Although the 2013 Criteria reflects the latest scientific knowledge on the toxicity of ammonia to certain freshwater aquatic life, including new toxicity data on sensitive freshwater mussels in the Family Unionidae, the species tested for development of the 2013 Criteria may not be present in some Central Valley waterways. The 2013 Criteria document therefore states that, "*unionid mussel species are not prevalent in some waters, such as the arid west ...*" and provides that, "*In the case of ammonia, where a state demonstrates that mussels are not present on a site-specific basis, the recalculation procedure may be used to remove the mussel species from the national criteria dataset to better represent the species present at the site.*"

The Central Valley Water Board issued a 3 April 2014 California Water Code Section 13267 Order for Information: 2013 Final Ammonia Criteria for Protection of Freshwater Aquatic Life (13267 Order) requiring the Discharger to either participate in an individual or group study to determine

¹⁵ Aquatic Life Ambient Water Quality Criteria for Ammonia – Freshwater, published August 2013 [EPA 822-R-13-001]

the presence of mussels or submit a method of compliance for complying with effluent limitations calculated assuming mussels present using the 2013 Criteria. The Discharger submitted a letter to the Central Valley Water Board indicating their participation in the Central Valley Clean Water Association Freshwater Collaborative Mussel Study. Studies are currently underway to determine how the latest scientific knowledge on the toxicity of ammonia reflected in the 2013 Criteria can be implemented in the Central Valley Region as part of a Basin Planning effort to adopt nutrient and ammonia objectives. Until the Basin Planning process is completed, the Central Valley Water Board will continue to implement the 1999 Criteria to interpret the Basin Plan's narrative toxicity objective. The 1999 NAWQC for the protection of freshwater aquatic life for total ammonia, recommends acute (1-hour average; criteria maximum concentration or CMC) standards based on pH and chronic (30-day average; criteria continuous concentration or CCC) standards based on pH and temperature. U.S. EPA also recommends that no 4-day average concentration should exceed 2.5 times the 30-day CCC. U.S. EPA found that as pH increased, both the acute and chronic toxicity of ammonia increased. Salmonids were more sensitive to acute toxicity effects than other species. However, while the acute toxicity of ammonia was not influenced by temperature, it was found that invertebrates and young fish experienced increasing chronic toxicity effects with increasing temperature. Because the Feather River has a beneficial use of cold freshwater habitat and the presence of salmonids and early fish life stages in the Feather River is well-documented, the recommended criteria for waters where salmonids and early life stages are present were used.

The maximum permitted effluent pH is 8.5, as the Basin Plan objective for pH in the receiving stream is the range of 6.5 to 8.5. In order to protect against the worst-case short-term exposure of an organism, a pH value of 8.5 was used to derive the acute criterion. The resulting acute criterion is 2.14 mg/L.

A chronic criterion was calculated for each day when paired pH and temperature data were measured using downstream receiving water data for pH and temperature. Rolling 30-day average criteria were calculated from downstream receiving water data using the criteria calculated for each day and the minimum observed 30-day average criterion was established as the applicable 30-day average chronic criterion, or 30-day CCC. The most stringent 30-day CCC was 1.81 mg/L (as N) based on downstream receiving water pH and temperature data collected from June 2014 through May 2017. The 4-day average concentration is derived in accordance with the U.S. EPA criterion as 2.5 times the 30-day CCC. Based on the 30-day CCC of 1.81 mg/L (as N), the 4-day average concentration that should not be exceeded is 4.52 mg/L (as N).

- (b) **RPA Results.** The Facility is a POTW that treats domestic wastewater. Untreated domestic wastewater contains ammonia in concentrations that is harmful to aquatic life and exceed the Basin Plan narrative toxicity objective. Federal regulations at 40 C.F.R. section 122.44(d)(1)(i) require that, "*Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have the*

reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality.” For priority pollutants, the SIP dictates the procedures for conducting the RPA. Ammonia is not a priority pollutant. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used professional judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent.

U.S. EPA’s September 2010 NPDES Permit Writer’s Manual, page 6-30, states, *“State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available...A permitting authority might also determine that WQBEL’s are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBEL’s for pathogens in all permits for POTW’s discharging to contact recreational waters).”* U.S. EPA’s TSD also recommends that factors other than effluent data should be considered in the RPA, *“When determining whether or not a discharge causes, has the reasonable potential to cause, or contributes to an excursion of a numeric or narrative water quality criterion for individual toxicants or for toxicity, the regulatory authority can use a variety of factors and information where facility-specific effluent monitoring data are unavailable. These factors also should be considered with available effluent monitoring data.”* With regard to POTW’s, U.S. EPA recommends that, *“POTW’s should also be characterized for the possibility of chlorine and ammonia problems.”* (TSD, p. 50)

Nitrification is a biological process that converts ammonia to nitrite and nitrite to nitrate. Denitrification is a process that converts nitrate to nitrite or nitric oxide and then to nitrous oxide or nitrogen gas, which is then released to the atmosphere. The Discharger does not use nitrification to remove ammonia from the waste stream. Inadequate or incomplete nitrification may result in the discharge of ammonia to the receiving stream. Ammonia is known to cause toxicity to aquatic organisms in surface waters. Discharges of ammonia in concentrations that produce detrimental physiological responses to human, plant, animal, or aquatic life would violate the Basin Plan’s narrative toxicity objective. Inadequate or incomplete nitrification creates the potential for ammonia to be discharged and provides the basis for the discharge to have a reasonable potential to cause or contribute to an in-stream excursion above the NAWQC. Therefore, the Central Valley Water Board finds the discharge has reasonable potential for ammonia and WQBEL’s are required.

- (c) **WQBEL’s.** As discussed in section IV.C.2.f of this Fact Sheet, the Discharger previously conducted dynamic modeling for ammonia, which was reviewed and approved by the Central Valley Water Board, and the results of which were included in Orders R5-2007-0134-01 and R5-2013-0094-01. In addition, as described in section IV.C.2.c of this Fact Sheet, since this Order will require significantly higher flows for discharges to occur at Discharge Point 001, the existing dynamic modeling results are

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expected to be conservative and protective of the receiving water. This Order retains the AMEL of 31 mg/L from Orders R5-2007-0134-01 and R5-2013-0094-01. Since ammonia is a non-priority pollutant that is not subject to the SIP, the MDEL established in Orders R5-2007-0134-01 and R5-2013-0094-01 must be replaced with an AWEL in accordance with 40 C.F.R. section 122.45(d), which requires AMEL's and AWEL's for POTW's unless impracticable. Therefore, this Order replaces the MDEL with an AWEL of 51 mg/L based on the Discharger's 11 September 2017 memorandum *City of Yuba City Dynamic Model Effluent Ammonia Data* (Larry Walker Associates).

- (d) **Plant Performance and Attainability.** Analysis of the effluent data shows that, except for the monthly average in December 2015, the Discharger has been able to comply with the AMEL and effluent concentrations were below the AWEL. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

ii. **Chlorine Residual**

- (a) **WQO.** U.S. EPA developed NAWQC for protection of freshwater aquatic life for chlorine residual. The recommended 4-day average (chronic) and 1-hour average (acute) criteria for chlorine residual are 0.011 mg/L and 0.019 mg/L, respectively. These criteria are protective of the Basin Plan's narrative toxicity objective.

- (b) **RPA Results.** The concentrations of chlorine used to disinfect wastewater are high enough to harm aquatic life and violate the Basin Plan narrative toxicity objective if discharged to the receiving water. Reasonable potential therefore does exist and effluent limits are required.

Federal regulations at 40 C.F.R. section 122.44(d)(1)(i) require that, "*Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality.*" For priority pollutants, the SIP dictates the procedures for conducting the RPA. Chlorine is not a priority pollutant. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used its judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent.

U.S. EPA's September 2010 NPDES Permit Writer's Manual, page 6-30, states, "*State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available...A permitting authority might also determine that WQBEL's are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBEL's for pathogens in all permits for POTW's discharging to contact recreational waters).*" U.S. EPA's TSD also recommends that factors other than effluent data should be considered in the RPA, "*When determining whether or not a discharge causes, has the reasonable potential to cause, or contributes to an excursion of a numeric*

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or narrative water quality criterion for individual toxicants or for toxicity, the regulatory authority can use a variety of factors and information where facility-specific effluent monitoring data are unavailable. These factors also should be considered with available effluent monitoring data.” With regard to POTW’s, U.S. EPA recommends that, “POTW’s should also be characterized for the possibility of chlorine and ammonia problems.” (TSD, p. 50)

The Discharger uses chlorine for disinfection, which is extremely toxic to aquatic organisms. Although the Discharger uses a sodium bisulfite process to dechlorinate the effluent prior to discharge to the Feather River at Discharge Point 001, the existing chlorine use and the potential for chlorine to be discharged provides the basis for the discharge to have a reasonable potential to cause or contribute to an in-stream excursion above the NAWQC.

Chlorine residual in the ponds is expected to dissipate prior to any direct discharge to the Feather River at Discharge Point 002 when the ponds are inundated. Therefore, discharge at Discharge Point 002 does not exhibit reasonable potential to cause or contribute to an in-stream excursion above the NAWQC.

- (c) **WQBEL’s (Discharge Point 001 only).** The U.S. EPA *Technical Support Document for Water Quality-Based Toxics Control* [EPA/505/2-90-001] contains statistical methods for converting chronic (4-day) and acute (1-hour) aquatic life criteria to average monthly and maximum daily effluent limitations based on the variability of the existing data and the expected frequency of monitoring. However, because chlorine is an acutely toxic constituent that can and will be monitored continuously, an average 1-hour limitation is considered more appropriate than an average daily limitation. This Order contains a 4-day average effluent limitation and 1-hour average effluent limitation for chlorine residual of 0.011 mg/L and 0.019 mg/L, respectively, at Discharge Point 001 based on U.S. EPA’s NAWQC, which implements the Basin Plan’s narrative toxicity objective for protection of aquatic life.
- (d) **Plant Performance and Attainability (Discharge Point 001 only).** The Discharger uses a sodium bisulfite process to dechlorinate the effluent prior to discharge to the Feather River at Discharge Point 001. Thus, the Central Valley Water Board concludes that immediate compliance with these effluent limitations is feasible.

iii. **Copper**

- (a) **WQO.** The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for copper. These criteria for copper are presented in dissolved concentrations, as 1-hour acute criteria and 4-day chronic criteria. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. Default U.S. EPA translators were used for the effluent and receiving water. As described in section IV.C.2.e of this Fact Sheet, the applicable acute and chronic criteria for copper in the effluent are 7.6 µg/L and 5.3 µg/L, respectively, as total recoverable.
- (b) **RPA Results.** The MEC for copper in the effluent was 8.5 µg/L based on 40 samples collected between June 2014 and May 2017. The maximum

observed upstream receiving water copper concentration was 2.3 µg/L based on three samples collected between June 2014 and May 2017. Therefore, copper in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for the protection of freshwater aquatic life.

- (c) **WQBEL's.** As discussed in section IV.C.2.f of this Fact Sheet, the Discharger previously conducted dynamic modeling for copper, which was reviewed and approved by the Central Valley Water Board, and the results of which were included in Orders R5-2007-0134-01 and R5-2013-0094-01. In addition, as described in section IV.C.2.c of this Fact Sheet, since this Order will require significantly higher flows for discharges to occur at Discharge Point 001, the existing dynamic modeling results are expected to be conservative and protective of the receiving water. Therefore, this Order retains the AMEL and MDEL of 50 µg/L and 85 µg/L, respectively, from Orders R5-2007-0134-01 and R5-2013-0094-01.
- (d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the MEC of 8.5 µg/L is less than the applicable WQBEL's. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

iv. **Dichlorobromomethane**

- (a) **WQO.** The CTR includes a criterion of 0.56 µg/L for dichlorobromomethane for the protection of human health for waters from which both water and organisms are consumed.
- (b) **RPA Results.** The MEC for dichlorobromomethane was 1.4 µg/L based on 40 samples collected between June 2014 and May 2017. Dichlorobromomethane was not detected in the upstream receiving water based on three samples collected between June 2014 and May 2017. Therefore, dichlorobromomethane in the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criterion for the protection of human health.
- (c) **WQBEL's.** The receiving water contains assimilative capacity for dichlorobromomethane; therefore, as discussed in section IV.C.2.c, a dilution credit of 221:1 may be allowed in the development of the WQBEL's for dichlorobromomethane. However, the Central Valley Water Board finds that granting of this dilution credit would allocate an unnecessarily large portion of the receiving water's assimilative capacity for dichlorobromomethane and could violate the Antidegradation Policy. Therefore, this Order retains the performance-based AMEL of 10 µg/L and MDEL of 30 µg/L from Order R5-2013-0094-01.
- (d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the MEC of 1.4 µg/L is less than the applicable WQBEL's. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

v. **Mercury**

- (a) **WQO.** The current NAWQC for protection of freshwater aquatic life, continuous concentration, for mercury is 0.77 µg/L (30-day average, chronic criteria). The CTR contains a human health criterion (based on a

threshold dose level causing neurological effects in infants) of 0.050 µg/L for waters from which both water and aquatic organisms are consumed. Both values are controversial and subject to change. In 40 C.F.R. part 131, U.S. EPA acknowledges that the human health criteria may not be protective of some aquatic or endangered species and that “...more stringent mercury limits may be determined and implemented through use of the State’s narrative criterion.” In the CTR, U.S. EPA reserved the mercury criteria for freshwater and aquatic life and may adopt new criteria at a later date.

The State Water Board adopted Resolution 2017-0027 on 2 May 2017, which approved *Part 2 of the Water Quality Control Plan for Inland Surface Waters, Enclosed Bays, and Estuaries of California—Tribal and Subsistence Fishing Beneficial Uses and Mercury Provisions* (Statewide Mercury Provisions). The Statewide Mercury Provisions establish a Sport Fish Water Quality Objective of an average 0.2 mg/kg methylmercury fish tissue concentration within a calendar year for waters with the beneficial uses of commercial and sport fishing (COMM), tribal tradition and culture (CUL), wildlife habitat (WILD), and marine habitat (MAR). This fish tissue objective corresponds to a water column concentration of 12 ng/L of total mercury for flowing water bodies (e.g., rivers, creeks, streams, and waters with tidal mixing). As shown in Table F-3, the beneficial uses of the Feather River include WILD; therefore, the Sport Fish Water Quality Objective is applicable.

- (b) **RPA Results.** The Statewide Mercury Provisions specify that the RPA shall be conducted using the maximum annual average effluent and background mercury concentrations for comparison with the Sport Fish Water Quality Objective. The MEC for mercury was 21 ng/L, with a maximum annual average of 7.8 ng/L, based on 39 samples collected in calendar years 2014 through 2016. The maximum annual average background concentration for mercury was 1.7 ng/L based on three samples collected in calendar year 2016. Therefore, the discharge does not exhibit reasonable potential to exceed the Sport Fish Water Quality Objective.

Mercury bioaccumulates in fish tissue and, therefore, the discharge of mercury to the receiving water may contribute to exceedances of the narrative toxicity objective and impact beneficial uses. The Feather River has been listed as an impaired water body pursuant to CWA section 303(d) because of mercury and the discharge must not cause or contribute to increased mercury levels.

- (c) **WQBEL’s.** Order R5-2013-0094-01 included a performance-based mass effluent limitation for mercury of 0.056 lbs/month. For this Order, the averaging period for the mass-based effluent limitation has been revised to be consistent with performance-based mass limitations assigned to other recently adopted permits in the region. Therefore, this Order contains a performance-based mass effluent limitation of 0.67 lbs/year for mercury, based on the monthly mass limitation included in Order R5-2013-0094-01. This limitation is based on maintaining the mercury loading until a TMDL is established or U.S. EPA develops mercury standards that are protective of human health. If U.S. EPA develops new

water quality standards for mercury, this Order may be reopened and the effluent limitations adjusted.

- (d) **Plant Performance and Attainability.** The mass effluent limitation for mercury is based on Facility performance. The Central Valley Water Board concludes, therefore, that immediate compliance with this effluent limitation is feasible.

vi. **Nitrate and Nitrite**

- (a) **WQO.** DDW has adopted Primary MCLs for the protection of human health for nitrite and nitrate that are equal to 1 mg/L and 10 mg/L (measured as nitrogen), respectively. DDW has also adopted a Primary MCL of 10 mg/L for the sum of nitrate and nitrite, measured as nitrogen.

U.S. EPA has developed a primary MCL and an MCL goal of 1 mg/L for nitrite (as nitrogen). For nitrate, U.S. EPA has developed Drinking Water Standards (10 mg/L as Primary MCL) and NAWQC for protection of human health (10 mg/L for non-cancer health effects).

- (b) **RPA Results.** The Facility is a POTW that treats domestic wastewater. Untreated domestic wastewater contains ammonia in concentrations that is harmful to aquatic life and exceed the Basin Plan's narrative toxicity objective. Nitrification is a biological process that converts ammonia to nitrate and nitrite, and will result in effluent nitrate concentrations above the Primary MCL for nitrate plus nitrite. Nitrate concentrations in a drinking water supply above the Primary MCL threatens the health of human fetuses and newborn babies by reducing the oxygen-carrying capacity of the blood (methemoglobinemia).

Federal regulations at 40 C.F.R. section 122.44(d)(1)(i) require that, *"Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality."* For priority pollutants, the SIP dictates the procedures for conducting the RPA. Nitrate and nitrite are not priority pollutants. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used professional judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent.

U.S. EPA's September 2010 NPDES Permit Writer's Manual, page 6-30, states, *"State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available...A permitting authority might also determine that WQBEL's are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBEL's for pathogens in all permits for POTW's discharging to contact recreational waters)." U.S. EPA's TSD also recommends that factors other than effluent data should be considered in the RPA, "When determining whether or not a discharge causes, has the*

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reasonable potential to cause, or contributes to an excursion of a numeric or narrative water quality criterion for individual toxicants or for toxicity, the regulatory authority can use a variety of factors and information where facility-specific effluent monitoring data are unavailable. These factors also should be considered with available effluent monitoring data.” With regard to POTW’S, U.S. EPA recommends that, *“POTW’s should also be characterized for the possibility of chlorine and ammonia problems.”* (TSD, p. 50)

The concentration of nitrogen in raw domestic wastewater is sufficiently high that the resultant treated wastewater has a reasonable potential to exceed or threaten to exceed the Primary MCL for nitrate plus nitrite unless the wastewater is treated for nitrogen removal, and therefore an effluent limit for nitrate plus nitrite is required. Denitrification is a process that converts nitrate to nitrite or nitric oxide and then to nitrous oxide or nitrogen gas, which is then released to the atmosphere. Inadequate or incomplete denitrification may result in the discharge of nitrate and/or nitrite to the receiving stream. Discharges of nitrate plus nitrite in concentrations that exceed the Primary MCL would violate the Basin Plan’s narrative chemical constituents objective. Inadequate or incomplete denitrification creates the potential for nitrate and nitrite to be discharged and provides the basis for the discharge to have a reasonable potential to cause or contribute to an in-stream excursion above the Primary MCL. Therefore, the Central Valley Water Board finds the discharge has reasonable potential for nitrate plus nitrite and WQBEL’s are required.

- (c) **WQBEL’s.** This Order contains an AMEL and AWEL for nitrate plus nitrite of 10 mg/L and 21 mg/L, respectively, based on the Basin Plan’s narrative chemical constituents objective for protection of the MUN beneficial use. These effluent limitations are included in this Order to assure the treatment process adequately nitrifies and denitrifies the waste stream to protect the beneficial use of municipal and domestic supply.
- (d) **Plant Performance and Attainability.** Analysis of the effluent data shows that the MEC of 4.85 mg/L is less than the applicable WQBEL’s. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

vii. **Pathogens**

- (a) **WQO.** In a letter to the Central Valley Water Board dated 8 April 1999, DDW indicated it would consider wastewater discharged to water bodies with identified beneficial uses of irrigation or contact recreation and where the wastewater receives dilution of more than 20:1 to be adequately disinfected if the effluent coliform concentration does not exceed 23 MPN/100 mL as a 7-day median and if the effluent coliform concentration does not exceed 240 MPN/100 mL more than once in any 30-day period.
- (b) **RPA Results.** Raw domestic wastewater inherently contains human pathogens that threaten human health and life, and constitute a threatened pollution and nuisance under CWC Section 13050 if discharged untreated to the receiving water. Reasonable potential for pathogens therefore exists and WQBEL’s are required.

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Federal regulations at 40 C.F.R. section 122.44(d)(1)(i) require that, *"Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality."* For priority pollutants, the SIP dictates the procedures for conducting the RPA. Pathogens are not priority pollutants. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used professional judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent.

U.S. EPA's September 2010 NPDES Permit Writer's Manual, page 6-30, states, *"State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available...A permitting authority might also determine that WQBEL's are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBEL's for pathogens in all permits for POTW's discharging to contact recreational waters)."* U.S. EPA's TSD also recommends that factors other than effluent data should be considered in the RPA, *"When determining whether or not a discharge causes, has the reasonable potential to cause, or contributes to an excursion of a numeric or narrative water quality criterion for individual toxicants or for toxicity, the regulatory authority can use a variety of factors and information where facility-specific effluent monitoring data are unavailable. These factors also should be considered with available effluent monitoring data."* (TSD, p. 50)

Municipal and domestic supply, agricultural irrigation, and body contact water recreation are beneficial uses of the Feather River. The critical low flow for the Feather River is 1,000 cfs and the design effluent flow for the Facility is 16 cfs (10.5 MGD, average dry weather flow). To protect these beneficial uses, the Central Valley Water board finds that the wastewater must be disinfected and adequately treated to prevent disease. Although the Discharger provides disinfection, inadequate or incomplete disinfection creates the potential for pathogens to be discharged and provides the basis for the discharge to have a reasonable potential to cause or contribute to an exceedance of the Basin Plan's narrative toxicity objective. Therefore, the Central Valley Water Board finds the discharge has reasonable potential for pathogens and WQBEL's are required.

- (c) **WQBEL's.** Pursuant to guidance from DDW, this Order includes effluent limitations for total coliform organisms of 23 MPN/100 mL as a 7-day median and 240 MPN/100 mL, not to be exceeded more than once in a 30-day period. These coliform limits are imposed to protect the beneficial uses of the receiving water, including public health through contact recreation and drinking water pathways.
- (d) **Plant Performance and Attainability.** The Facility is designed to provide chlorine disinfection to achieve compliance with the effluent

limitations for pathogens. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

viii. pH

- (a) **WQO.** The Basin Plan includes a water quality objective for surface waters (except for Goose Lake) that the *“...pH shall not be depressed below 6.5 nor raised above 8.5.”*
- (b) **RPA Results.** Raw domestic wastewater inherently has variable pH. Additionally, some wastewater treatment processes can increase or decrease wastewater pH which if not properly controlled, would violate the Basin Plan’s numeric objective for pH in the receiving water. Therefore, reasonable potential exists for pH and WQBEL’s are required.

Federal regulations at 40 C.F.R. section 122.44(d)(1)(i) require that, *“Limitations must control all pollutants or pollutant parameters (either conventional, nonconventional, or toxic pollutants) which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality.”* For priority pollutants, the SIP dictates the procedures for conducting the RPA. pH is not a priority pollutant. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Due to the site-specific conditions of the discharge, the Central Valley Water Board has used professional judgment in determining the appropriate method for conducting the RPA for this non-priority pollutant constituent.

U.S. EPA’s September 2010 NPDES Permit Writer’s Manual, page 6-30, states, *“State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not available...A permitting authority might also determine that WQBEL’s are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBEL’s for pathogens in all permits for POTW’s discharging to contact recreational waters).”* U.S. EPA’s TSD also recommends that factors other than effluent data should be considered in the RPA, *“When determining whether or not a discharge causes, has the reasonable potential to cause, or contributes to an excursion of a numeric or narrative water quality criterion for individual toxicants or for toxicity, the regulatory authority can use a variety of factors and information where facility-specific effluent monitoring data are unavailable. These factors also should be considered with available effluent monitoring data.”* (TSD, p. 50)

The Facility is a POTW that treats domestic wastewater. Based on continuous sampling from June 2014 through May 2017, the maximum pH reported was 9.6 and the minimum was 6.4. Although the Discharger has proper pH controls in place, the pH for the Facility’s influent varies due to the nature of municipal sewage, which provides the basis for the discharge to have a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan’s numeric objective for pH in the receiving water. Therefore, WQBEL’s for pH are required in this Order.

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(c) **WQBEL's**

- (1) **Discharge Points 001.** Effluent limitations for pH of 6.5 as an instantaneous minimum and 8.5 as an instantaneous maximum are included in this Order based on protection of the Basin Plan objectives for pH.
- (2) **Discharge Point 002.** Effluent limitations for pH of 6.0 as an instantaneous minimum and 8.5 as an instantaneous maximum are included in this Order based on protection of the Basin Plan objectives for pH. The soil beneath the disposal ponds is expected to buffer the lower pH prior to discharge to the Feather River. The reduction in pH will also be minimized by the retention time in the ponds, which can increase the pH by the change in temperature.

- (d) **Plant Performance and Attainability.** Effluent pH ranged from 6.4 to 9.6; however, the minimum pH was observed below the instantaneous minimum limitation of 6.5 for Discharge Point 001 only once and the maximum pH was observed above the instantaneous maximum limitation of 8.5 only twice. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

ix. **Settleable Solids**

- (a) **WQO.** For inland surface waters, the Basin Plan states that “[w]ater shall not contain substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.” Order R5-2013-0094-01 included an AMEL and MDEL of 0.1 ml/L and 0.2 ml/L, respectively, for settleable solids to implement the narrative settleable solids objective.
- (b) **RPA Results.** Settleable solids were detected in the effluent in 109 samples, with a maximum effluent concentration of 39 ml/L, and exceeded the MDEL of 0.2 ml/L on seven occasions. Therefore, settleable solids in the discharge at Discharge Point 001 has a reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's narrative settleable solids objective.

Settleable solids discharged to the ponds is expected to settle prior to discharge at Discharge Points 002. Therefore, settleable solids in the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's narrative settleable solids objective.

- (c) **WQBEL's (Discharge Point 001 only).** This Order contains an AMEL and MDEL for settleable solids. Because the amount of settleable solids is measured in terms of volume per volume without a mass component, it is impracticable to calculate mass limitations for inclusion in this Order. A daily maximum effluent limitation for settleable solids is included in the Order, in lieu of a weekly average, to ensure that the treatment works operate in accordance with design capabilities.
- (d) **Plant Performance and Attainability (Discharge Point 001 only).** As discussed in section II.D of this Fact Sheet, the Discharger has received effluent limitation violations for settleable solids during the term of Order R5-2013-0094-01. The effluent limitations for settleable solids in this

Order are the same as those in previous Orders R5-2007-0134-01 and R5-2013-0094-01; therefore, a compliance schedule cannot be issued because the limits are not new and/or more stringent. The discharge only exceeded the MDEL of 0.2 ml/L in seven out of 1,116 samples (i.e., less than 1%).

4. WQBEL Calculations

- a. This Order includes WQBEL's for ammonia, chlorine residual (Discharge Point 001 only), diazinon and chlorpyrifos, copper, dichlorobromomethane, mercury, nitrate plus nitrite, pH, settleable solids (Discharge Point 001 only), and total coliform organisms. The general methodology for calculating WQBEL's based on the different criteria/objectives is described in subsections IV.C.5.b through e, below. See Attachment H for the WQBEL calculations.
- b. **Effluent Concentration Allowance.** For each water quality criterion/objective, the ECA is calculated using the following steady-state mass balance equation from Section 1.4 of the SIP:

$$\begin{aligned} ECA &= C + D(C - B) && \text{where } C > B, \text{ and} \\ ECA &= C && \text{where } C \leq B \end{aligned}$$

where:

ECA	= effluent concentration allowance
D	= dilution credit
C	= the priority pollutant criterion/objective
B	= the ambient background concentration.

According to the SIP, the ambient background concentration (B) in the equation above shall be the observed maximum with the exception that an ECA calculated from a priority pollutant criterion/objective that is intended to protect human health from carcinogenic effects shall use the arithmetic mean concentration of the ambient background samples.

- c. **Primary and Secondary MCL's.** For non-priority pollutants with Primary MCL's to protect human health (e.g., nitrate plus nitrite), the AMEL is set equal to the Primary MCL and the AWEL is calculated using the AWEL/AMEL multiplier, where the AWEL multiplier is based on a 98th percentile occurrence probability and the AMEL multiplier is from Table 2 of the SIP.

For non-priority pollutants with Secondary MCL's that protect public welfare (e.g., taste, odor, and staining), WQBEL's were calculated by setting the LTA equal to the Secondary MCL and using the AMEL multiplier to set the AMEL. The AWEL was calculated using the MDEL/AMEL multiplier from Table 2 of the SIP.

- d. **Aquatic Toxicity Criteria.** For priority pollutants with acute and chronic aquatic toxicity criteria, the WQBEL's are calculated in accordance with Section 1.4 of the SIP. The ECA's are converted to equivalent long-term averages (i.e., LTA_{acute} and LTA_{chronic}) using statistical multipliers and the lowest LTA is used to calculate the AMEL and MDEL using additional statistical multipliers. For non-priority pollutants, WQBEL's are calculated using similar procedures, except that an AWEL is determined utilizing multipliers based on a 98th percentile occurrence probability.

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- e. **Human Health Criteria.** For priority pollutants with human health criteria, the WQBEL's are calculated in accordance with Section 1.4 of the SIP. The AMEL is set equal to the ECA and the MDEL is calculated using the MDEL/AMEL multiplier from Table 2 of the SIP. For non-priority pollutants with human health criteria, WQBEL's are calculated using similar procedures, except that an AWEL is established using the MDEL/AMEL multiplier from Table 2 of the SIP.

$$AMEL = mult_{AMEL} \left[\min \left(\overbrace{M_A ECA_{acute}}^{LTA_{acute}}, M_C ECA_{chronic} \right) \right]$$

$$MDEL = mult_{MDEL} \left[\min \left(M_A ECA_{acute}, \underbrace{M_C ECA_{chronic}}_{LTA_{chronic}} \right) \right]$$

$$MDEL_{HH} = \left(\frac{mult_{MDEL}}{mult_{AMEL}} \right) AMEL_{HH}$$

where:

$mult_{AMEL}$ = statistical multiplier converting minimum LTA to AMEL

$mult_{MDEL}$ = statistical multiplier converting minimum LTA to MDEL

M_A = statistical multiplier converting acute ECA to LTA_{acute}

M_C = statistical multiplier converting chronic ECA to $LTA_{chronic}$

Summary of Water Quality-Based Effluent Limitations Discharge Points 001 and 002

Table F-15. Summary of Water Quality-Based Effluent Limitations – Discharge Points 001 and 002

Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Conventional Pollutants						
pH	standard units	--	--	--	6.5 ¹	8.5
Priority Pollutants						
Copper, Total Recoverable	µg/L	50	--	85	--	--
Dichlorobromomethane	µg/L	10	--	30	--	--
Mercury, Total recoverable	lbs/year	0.67 ²	--	--	--	--
Non-Conventional Pollutants						
Ammonia Nitrogen, Total (as N)	mg/L	31	51	--	--	--
	lbs/day ³	2,700	4,500	--	--	--
Chlorine, Total Residual	mg/L	--	0.011 ⁴	0.019 ⁵	--	--
Diazinon and Chlorpyrifos	µg/L	6	7			

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Parameter	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Nitrate Plus Nitrite (as N)	mg/L	10	21	--	--	--
Settleable Solids ⁹	ml/L	0.1	--	0.2	--	--
Total Coliform Organisms	MPN/100 mL	--	23 ¹⁰	240 ¹¹		

¹ The instantaneous minimum effluent limitation is limited to 6.0 standard units for discharges at Discharge Point 002.

² For a calendar year, the total annual mass discharge of total mercury shall not exceed 0.67 pounds/year.

³ Based on a design flow of 10.5 MGD.

⁴ Applied as a 4-day average effluent limitation.

⁵ Applied as a 1-hour average effluent limitation.

⁶ Average Monthly Effluent Limitation

$$S_{AMEL} = \frac{C_{DM-avg}}{0.079} + \frac{C_{CM-avg}}{0.012} \leq 1.0$$

C_{DM-avg} = average monthly diazinon effluent concentration in µg/L.

C_{CM-avg} = average monthly chlorpyrifos effluent concentration in µg/L.

⁷ Average Weekly Effluent Limitation

$$S_{AWEL} = \frac{C_{DW-avg}}{0.14} + \frac{C_{CW-avg}}{0.021} \leq 1.0$$

C_{DW-avg} = average weekly diazinon effluent concentration in µg/L.

C_{CW-avg} = average weekly chlorpyrifos effluent concentration in µg/L.

⁸ Applied as an annual average effluent limitation.

⁹ Applicable at Discharge Point 001 only.

¹⁰ Applied as a 7-day median effluent limitation.

¹¹ Not to be exceeded more than once in any 30-day period.

5. Whole Effluent Toxicity (WET)

For compliance with the Basin Plan's narrative toxicity objective, this Order requires the Discharger to conduct whole effluent toxicity testing for acute and chronic toxicity, as specified in the Monitoring and Reporting Program (Attachment E, section V). This Order also contains effluent limitations for acute and chronic toxicity and requires the Discharger to implement best management practices to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity.

- a. **Acute Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" (Basin Plan at Section 3.1.20) The Basin Plan also states that, "...effluent limits based upon acute biotoxicity tests of effluents will be prescribed where appropriate..."

For priority pollutants, the SIP dictates the procedures for conducting the RPA. Acute toxicity is not a priority pollutant. Therefore, the Central Valley Water Board is not restricted to one particular RPA method. Therefore, due to the site-specific conditions of the discharge, the Central Valley Water Board has used professional judgment in determining the appropriate method for conducting the RPA.

U.S. EPA's September 2010 NPDES Permit Writer's Manual, page 6-30, states, "*State implementation procedures might allow, or even require, a permit writer to determine reasonable potential through a qualitative assessment process without using available facility-specific effluent monitoring data or when such data are not*

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available...A permitting authority might also determine that WQBEL's are required for specific pollutants for all facilities that exhibit certain operational or discharge characteristics (e.g., WQBEL's for pathogens in all permits for POTW's discharging to contact recreational waters)." Although the discharge has been consistently in compliance with the acute effluent limitations, the Facility is a POTW that treats domestic wastewater containing ammonia and other acutely toxic pollutants. Acute toxicity effluent limits are required to ensure compliance with the Basin Plan's narrative toxicity objective.

U.S. EPA Region 9 provided guidance for the development of acute toxicity effluent limitations in the absence of numeric water quality objectives for toxicity in its document titled "Guidance for NPDES Permit Issuance", dated February 1994. In section B.2. "Toxicity Requirements" (pgs. 14-15) it states that, "In the absence of specific numeric water quality objectives for acute and chronic toxicity, the narrative criterion 'no toxics in toxic amounts' applies. Achievement of the narrative criterion, as applied herein, means that ambient waters shall not demonstrate for acute toxicity: 1) less than 90% survival, 50% of the time, based on the monthly median, or 2) less than 70% survival, 10% of the time, based on any monthly median. For chronic toxicity, ambient waters shall not demonstrate a test result of greater than 1 TUC." Consistent with Order R5-2013-0094-01, effluent limitations for acute toxicity have been included in this Order as follows:

Acute Toxicity. Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:

Minimum for any one bioassay ----- 70%
Median for any three consecutive bioassays ----- 90%

- b. **Chronic Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, "All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life." (Basin Plan at Section 3.1.20.) The table below summarizes chronic WET testing performed by the Discharger from June 2014 through August 2018. This data was used to determine if the discharge has reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's narrative toxicity objective. The results below represent results for tests using either the laboratory water or receiving water as the control, unless otherwise noted.

Table F-16. Whole Effluent Chronic Toxicity Testing Results

Date	Fathead Minnow <i>Pimephales promelas</i>		Water Flea <i>Ceriodaphnia dubia</i>		Green Algae <i>Selenastrum capricornutum</i>
	Survival (TUC)	Growth (TUC)	Survival (TUC)	Reproduction (TUC)	Growth (TUC)
8 July 2014	1 ²	1.8 ²	1 ^{1,2,6}	1.8 ⁶	1
7 October 2014	1 ²	1 ²	1 ⁶	1.8 ⁶	1
6 January 2015	1 ²	1.8 ²	1 ⁶	1.8 ^{1,6} / 12 ^{2,6}	1
15 June 2015	1.8 ²	1 ²	1 ⁶	>47.6 ⁶	1.8 ²
15 September 2015	--	--	1 ⁶	>47.6 ⁶	--
22 September 2015	1.8 ²	1.8 ²	1 ⁶	>47.6 ⁶	1.8
3 November 2015	--	--	1 ⁶	12 ⁶	--
1 December 2015	1.8 ²	1.8 ²	1.8 ⁶	>47.6 ⁶	5.1 ¹ / 1 ²
3 March 2016	--	--	3 ⁶	>47.6 ⁶	1

Date	Fathead Minnow <i>Pimephales promelas</i>		Water Flea <i>Ceriodaphnia dubia</i>		Green Algae <i>Selenastrum capricornutum</i>
	Survival (TUc)	Growth (TUc)	Survival (TUc)	Reproduction (TUc)	Growth (TUc)
15 March 2016	1 ² / 1.8 ²	1.8	3 ⁶	3 ⁶	--
29 March 2016	--	--	3 ⁶	>47.6 ⁶	--
19 April 2016	--	--	3 ⁶	>47.6 ⁶	--
17 May 2016	--	--	3 ⁶	>47.6 ⁶	--
8 June 2016	1.8 ²	1.8 ²	--	--	1.8 ¹ / 1 ²
2 August 2016	1	1 ¹ / 1.8 ²	--	--	1.8 ¹ / 1 ²
15 August 2016	--	--	3 ⁶	>47.6 ⁶	--
29 August 2016	--	--	3 ⁶	>47.6 ⁶	--
10 October 2016	1.8	1.8	3 ⁶	23.8 ⁶	1.8 ¹ / 1 ²
8 November 2016	--	--	3 ⁶	>47.6 ⁶	--
6 December 2016	--	--	3 ⁶	>47.6 ⁶	--
17 January 2017	1.8	1.8 ¹ / 5.1 ²	3 ⁶	3 ⁶	5.1 ¹ / 1.8 ²
7 March 2017	--	--	3 ⁶	>47.6 ⁶	--
16 May 2017	1.8 ¹ / 1 ²	1.8 ¹ / 1 ²	3 ⁶	6 ⁶	1
20 May 2017	--	--	3 ⁶	>47.6 ⁶	--
27 May 2017	--	--	3 ⁶	>47.6 ⁶	--
11 July 2017	1 ¹ / 1.8 ²	1 ¹ / 1.8 ²	3 ⁶	3 ^{3, 6} / >47.6 ^{4, 6}	1
10 October 2017	1.8 ²	1.8 ²	3 ⁶	>200 ⁶	1.8 ¹ / 1 ²
30 January 2018	1.8	1.8	3 ⁶	3 ⁶	1.8
3 April 2018	1.8 ²	1.8 ²	3 ⁶	>47.6 ⁶	1.8 ¹ / 1 ²
7 August 2018	1.8	1.8	3 ⁶	3 ⁵ /23.8 ⁶	--

- ¹ Represents results using receiving water control.
- ² Represents results using laboratory water control.
- ³ Test performed by Pacific EcoRisk.
- ⁴ Test performed by Aquascience.
- ⁵ Freeze treated test.
- ⁶ Suspected pathogen interference.

- i. **RPA.** A dilution ratio of 12:1 is available for chronic whole effluent toxicity at Discharge Point 001. Chronic toxicity testing results exceeded 12 chronic toxicity units (TUc) (as 100/NOEC) at Discharge Points 001 and 002.

The Discharger initiated a Toxicity Reduction Evaluation (TRE) after an accelerated monitoring event in December 2015 resulted in >47.6 TUc for *C. dubia* reproduction. Studies to investigate the source of toxicity determined that there is no toxicant present in the effluent, but rather a pathogen present in the dechlorination channel is interfering with the tests. The pathogen issues began during the current permit, which added new effluent limits for total residual chlorine when discharging to the ponds. The Discharger did not previously provide dechlorination when discharging to the ponds because Order R5-2007-0134-01 did not include total residual chlorine effluent limits at Discharge Point 002; therefore, chlorine in the dechlorination channel during pond discharges is suspected of keeping the channel free of pathogens. Order R5-2013-0094-01 was amended in May 2018 to remove the total residual chlorine effluent limits for the pond discharges. By allowing chlorinated water to flow through the dechlorination channel when discharging to the ponds, the chlorine may help control the proliferation of the pathogen interfering with the chronic toxicity test,

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which is not designed to evaluate toxicity due to pathogens. The EPA test is designed to measure toxic effects from chemical toxicants. The Chronic Toxicity Testing Method Manual allows for modification of effluent to control pathogen interference¹⁶. The Discharger sampled for chronic toxicity in the chlorinated effluent in August 2018, which was the first chronic toxicity testing since the permit amendment. The August 2018 results demonstrated toxicity to *C. dubia* reproduction on chlorinated effluent that was dechlorinated in the laboratory; however, effluent samples that were freeze-treated to evaluate the use of freezing to remove microbial interferences resulted in 3 TUC.

The Central Valley Water Board suspects that the observed chronic toxicity in the effluent is the result of pathogen interference. Therefore, the discharge does not have reasonable potential to cause or contribute to an instream exceedance of the Basin Plan's narrative toxicity objective.

D. Final Effluent Limitation Considerations

1. Mass-based Effluent Limitations

40 C.F.R. section 122.45(f)(1) requires effluent limitations be expressed in terms of mass, with some exceptions, and 40 C.F.R. section 122.45(f)(2) allows pollutants that are limited in terms of mass to additionally be limited in terms of other units of measurement. This Order includes effluent limitations expressed in terms of mass and concentration. In addition, pursuant to the exceptions to mass limitations provided in 40 C.F.R. section 122.45(f)(1), some effluent limitations are not expressed in terms of mass, such as pH and temperature, and when the applicable standards are expressed in terms of concentration (e.g., CTR criteria and MCL's) and mass limitations are not necessary to protect the beneficial uses of the receiving water.

Mass-based effluent limitations have been established in this Order for ammonia because it is an oxygen demanding substance. In addition, mass-based limits for methylmercury have been established in this Order in accordance with the Delta Methylmercury Control Program. Except for the pollutants listed above, mass-based effluent limitations are not included in this Order for pollutant parameters for which effluent limitations are based on water quality objectives and criteria that are concentration-based.

Mass-based effluent limitations were calculated based upon the design flow (average dry weather flow) in Prohibition III.E of this Order.

2. Averaging Periods for Effluent Limitations

40 C.F.R. section 122.45(d) requires AMEL's and AWEL's for POTW's unless impracticable. For copper and dichlorobromomethane, AWEL's have been replaced with MDEL's in accordance with Section 1.4 of the SIP. Furthermore, for pH, settleable solids, and total coliform organisms, AMEL's and AWEL's have been replaced or supplemented with effluent limitations utilizing shorter averaging periods. The rationale

¹⁶ "When parallel testing has confirmed pathogen interference, the regulatory authority may allow modifications of the effluent samples or receiving water diluent to remove or inactivate the pathogens (Subsection 11.3.4.6.1 - 11.3.4.6.4). Techniques that control pathogen interference without modifying the effluent sample (11.3.4.5) are recommended, but they may not always be able to minimize pathogen interference to the extent that test results are not confounded by mortality due to pathogens. Therefore, regulatory authorities may allow appropriate pathogen control techniques (including those that modify the effluent sample) on a case-by-case basis." [Section 11.3.4.6 Short-term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Waters to Freshwater Organisms, Fourth Edition, October 2002]

for using shorter averaging periods for these constituents is discussed in section IV.C.3 of this Fact Sheet.

3. Satisfaction of Anti-Backsliding Requirements

The CWA specifies that a revised permit may not include effluent limitations that are less stringent than the previous permit unless a less stringent limitation is justified based on exceptions to the anti-backsliding provisions contained in CWA sections 402(o) or 303(d)(4), or, where applicable, 40 C.F.R. section 122.44(l).

The effluent limitations in this Order are at least as stringent as the effluent limitations in Order R5-2013-0094-01, with the exception of effluent limitations for bis (2-ethylhexyl) phthalate, lead, manganese, and nitrite. The effluent limitations for these pollutants are less stringent than those in Order R5-2013-0094-01. This relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations.

- a. **CWA section 402(o)(1) and 303(d)(4).** CWA section 402(o)(1) prohibits the establishment of less stringent water quality-based effluent limits “*except in compliance with Section 303(d)(4).*” CWA section 303(d)(4) has two parts: paragraph (A) which applies to nonattainment waters and paragraph (B) which applies to attainment waters.
 - i. For waters where standards are not attained, CWA section 303(d)(4)(A) specifies that any effluent limit based on a TMDL or other WLA may be revised only if the cumulative effect of all such revised effluent limits based on such TMDL’s or WLAs will assure the attainment of such water quality standards.
 - ii. For attainment waters, CWA section 303(d)(4)(B) specifies that a limitation based on a water quality standard may be relaxed where the action is consistent with the antidegradation policy.

The Feather River is considered an attainment water for bis (2-ethylhexyl) phthalate, lead, manganese, and nitrite because the receiving water is not listed as impaired on the 303(d) list for these constituents.¹⁷ As discussed in section IV.D.4, below, removal of the effluent limits complies with federal and state antidegradation requirements. Thus, removal of the effluent limitations for bis (2-ethylhexyl) phthalate, lead, manganese, and nitrite from Order R5-2013-0094-01 meets the exception in CWA section 303(d)(4)(B).

- b. **CWA section 402(o)(2).** CWA section 402(o)(2) provides several exceptions to the anti-backsliding regulations. CWA 402(o)(2)(B)(i) allows a renewed, reissued, or modified permit to contain a less stringent effluent limitation for a pollutant if information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance.

As described further in section IV.C.3.b of this Fact Sheet, updated information that was not available at the time Order R5-2013-0094-01 was issued indicates that bis (2-ethylhexyl) phthalate, lead, manganese, and nitrite do not exhibit reasonable potential to cause or contribute to an exceedance of water quality objectives in the

¹⁷ “The exceptions in Section 303(d)(4) address both waters in attainment with water quality standards and those not in attainment, i.e. waters on the section 303(d) impaired waters list.” State Water Board Order WQ 2008-0006, Berry Petroleum Company, Poso Creek/McVan Facility.

receiving water. The updated information that supports the relaxation of effluent limitations for these constituents includes the following:

- i. **Bis (2-ethylhexyl) Phthalate.** Effluent and receiving water monitoring data collected between June 2014 and May 2017 for bis (2-ethylhexyl) phthalate indicates that the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the CTR human health criteria.
- ii. **Lead.** Effluent and receiving water monitoring data collected between June 2014 and May 2017 for lead indicates that the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the CTR aquatic life criteria.
- iii. **Manganese.** Effluent monitoring data collected in calendar years 2014 through 2016 indicates that manganese in the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the Secondary MCL.
- iv. **Nitrite.** Effluent and receiving water monitoring data collected between June 2014 and May 2017 for nitrite indicates that the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the Primary MCL.

Thus, removal of the effluent limitations for bis (2-ethylhexyl) phthalate, lead, manganese, and nitrite from Order R5-2013-0094-01 is in accordance with CWA section 402(o)(2)(B)(i), which allows for the removal of effluent limitations based on information that was not available at the time of permit issuance.

- c. **Chronic Whole Effluent Toxicity (WET).** Order R5-2013-0094-01 included a narrative chronic WET limit. As discussed in section IV.C.5.b of this Fact Sheet, chronic WET testing performed by the Discharger indicates that the discharge does not exhibit reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan's narrative toxicity objective. Therefore, the narrative chronic toxicity effluent limitation has not been retained. This Order, however, is not less stringent because the same requirements to conduct chronic WET testing, accelerated monitoring, and to evaluate instances of toxicity are continued. The removal of the narrative chronic toxicity effluent limitation does not result in a reduction in effluent quality or a reduced level of treatment. The renewed permit is consistent with the antidegradation provisions of 40 C.F.R. section 131.12 and the State Antidegradation Policy because this Order imposes equivalent requirements to Order R5-2013-0094-01 and, therefore, does not allow degradation.

However, even if it was determined that removal of the narrative chronic toxicity effluent limit is a relaxation of permit requirements, the relaxation meets the exception to backsliding under CWA section 402(o)(2)(B)(i), which allows a renewed, re-issued, or modified permit to contain a less stringent effluent limitation for a pollutant if information is available that was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and that would have justified the application of a less-stringent effluent limitation at the time of permit issuance. The new chronic WET data discussed above is new information that supports the removal of the narrative chronic toxicity effluent limitation.

- d. **Flow.** Order R5-2013-0094-01 included flow as an effluent limit based on the Facility design flow. In accordance with Order R5-2013-0094-01, compliance with the flow limit was calculated using the average monthly flow over three consecutive dry weather months. Flow is not a pollutant and therefore has been changed from an effluent limit to a discharge prohibition in this Order, which is an equivalent level

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of regulation. This Order is not less stringent because compliance with flow as a discharge prohibition will be calculated the same way as the previous Order. Flow as a discharge prohibition adequately regulates the Facility, does not allow for an increase in the discharge of pollutants, and does not constitute backsliding.

4. Antidegradation Policies

- a. **Surface Water.** This Order does not allow for an increase in flow or mass of pollutants to the receiving water. Therefore, a complete antidegradation analysis is not necessary. The Order requires compliance with applicable federal technology-based standards and with WQBEL's where the discharge could have the reasonable potential to cause or contribute to an exceedance of water quality standards. The permitted discharge is consistent with the antidegradation provisions of 40 C.F.R. section 131.12 and the State Antidegradation Policy. Compliance with these requirements will result in the use of best practicable treatment or control of the discharge. The impact on existing water quality will be insignificant.

This Order removes effluent limitations for bis (2-ethylhexyl) phthalate, lead, manganese, and nitrite based on updated monitoring data demonstrating that the effluent does not cause or contribute to an exceedance of the applicable water quality criteria or objectives in the receiving water. The removal of WQBEL's for these parameters will not result in an increase in pollutants concentration or loading, a decrease in the level of treatment or control, or a reduction of water quality. Therefore, the Central Valley Water Board finds that the removal of the effluent limitations does not result in an increase in pollutants or any additional degradation of the receiving water. Thus, the removal of effluent limitations is consistent with the antidegradation provisions of 40 C.F.R. section 131.12 and State Water Board Resolution No. 68-16.

- b. **Groundwater.** The Discharger uses six unlined disposal ponds located in the Feather River floodplain for discharge of secondary-treated effluent. Domestic wastewater contains constituents such as total dissolved solids, specific conductivity, pathogens, nitrates, organics, metals, and oxygen demanding substances (BOD). Percolation from the disposal ponds may result in an increase in the concentration of these constituents in groundwater. The State Antidegradation Policy generally prohibits the Central Valley Water Board from authorizing activities that will result in the degradation of high-quality waters unless it has been shown that:
- i. The degradation will not result in water quality less than that prescribed in state and regional policies, including violation of one or more water quality objectives;
 - ii. The degradation will not unreasonably affect present and anticipated future beneficial uses;
 - iii. The discharger will employ Best Practicable Treatment or Control (BPTC) to minimize degradation; and
 - iv. The degradation is consistent with the maximum benefit to the people of the state.

Some degradation of groundwater may be consistent with the State Anti-Degradation Policy provided that the Discharger is implementing best practicable treatment or control (BPTC) measures. The Facility is designed and constructed to

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provide secondary level treatment and disinfection to treat municipal domestic wastewater prior to discharge. This level of treatment may result in limited groundwater degradation not exceeding water quality objectives. Providing wastewater treatment to the community is in the best interest of the people of the state. The Discharger's treatment constitutes best practicable treatment or control and complies with the State Antidegradation Policy.

As discussed in section III.E.1 of the Fact Sheet, groundwater monitoring results do not indicate degradation of groundwater quality when compared to background. Groundwater limitations have been included in this order (at or below) the water quality objective for protection of the domestic or municipal supply (MUN) beneficial use of groundwater.

5. Stringency of Requirements for Individual Pollutants

This Order contains both technology-based effluent limitations and WQBEL's for individual pollutants. The technology-based effluent limitations consist of restrictions on BOD₅, pH, and TSS. Restrictions on these pollutants are discussed in section IV.B.2 of this Fact Sheet. This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements. In addition, this Order contains effluent limitations more stringent than the minimum, federal technology-based requirements that are necessary to meet water quality standards. For pH, both technology-based effluent limitations and WQBEL's are applicable. The more stringent of these effluent limitations are implemented by this Order. These limitations are not more stringent than required by the CWA.

WQBEL's have been derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards. To the extent that toxic pollutant WQBEL's were derived from the CTR, the CTR is the applicable standard pursuant to 40 C.F.R. section 131.38. The procedures for calculating the individual water quality-based effluent limitations for priority pollutants are based on the CTR implemented by the SIP, which was approved by U.S. EPA on 18 May 2000. Collectively, this Order's restrictions on individual pollutants are no more stringent than required to implement the requirements of the CWA.

Summary of Final Effluent Limitations Discharge Points 001 and 002

Table F-17. Summary of Final Effluent Limitations – Discharge Points 001 and 002

Parameter	Units	Effluent Limitations					Basis ¹
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Conventional Pollutants							
Biochemical Oxygen Demand (5-day @ 20°C)	mg/L	30	45	60	--	--	CFR
	lbs/day ⁴	2,600	3,900	5,300	--	--	
	% Removal	85	--	--	--	--	
pH	standard units	--	--	--	6.5 ²	8.5	BP
	mg/L	30	45	60	--	--	CFR
	lbs/day ⁴	2,600	3,900	5,300	--	--	

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Parameter	Units	Effluent Limitations					Basis ¹
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Total Suspended Solids	% Removal	85	--	--	--	--	
Priority Pollutants							
Copper, Total Recoverable	µg/L	50	--	85	--	--	CTR
Dichloro-bromomethane	µg/L	10	--	30	--	--	CTR
Mercury, Total Recoverable	lbs/year	0.67 ³	--	--	--	--	PB
Non-Conventional Pollutants							
Ammonia Nitrogen, Total (as N)	mg/L	31	51	--	--	--	NAWQC
	lbs/day ⁴	2,700	4,500	--	--	--	
Chlorine, Total Residual	mg/L	--	0.011 ⁵	0.019 ⁶	--	--	NAWQC
Diazinon and Chlorpyrifos	µg/L	7	8	--	--	--	TMDL
Nitrate Plus Nitrite (as N)	mg/L	10	21	--	--	--	MCL
Settleable Solids ¹⁰	ml/L	0.1	--	0.2	--	--	BP
Total Coliform Organisms	MPN/100 mL	--	23 ¹¹	240 ¹²	--	--	Title 22

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Parameter	Units	Effluent Limitations					Basis ¹
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	

- ¹ CFR – Based on secondary treatment standards contained in 40 C.F.R. part 133.
BP – Based on water quality objectives contained in the Basin Plan.
CTR – Based on water quality criteria contained in the California Toxics Rule and applied as specified in the SIP.
NAWQC – Based on U.S. EPA's National Ambient Water Quality Criteria for the protection of freshwater aquatic life.
TMDL – Based on the TMDL for diazinon and chlorpyrifos in the Sacramento and Feather Rivers.
MCL – Based on the Primary Maximum Contaminant Level.
Title 22 – Based on State Water Board Division of Drinking Water Reclamation Criteria, CCR, Division 4, Chapter 3 (Title 22).
- ² The instantaneous minimum effluent limitation is limited to 6.0 standard units for discharges at Discharge Point 002.
- ³ For a calendar year, the total annual mass discharge of total mercury shall not exceed 0.67 pounds/year.
- ⁴ Based on a design flow of 10.5 MGD.
- ⁵ Applied as a 4-day average effluent limitation. At Discharge Point 001 only.
- ⁶ Applied as a 1-hour average effluent limitation. At Discharge Point 001 only.
- ⁷ Average Monthly Effluent Limitation

$$S_{AMEL} = \frac{C_{DM-avg}}{0.079} + \frac{C_{CM-avg}}{0.012} \leq 1.0$$

$$C_{DM-avg} = \text{average monthly diazinon effluent concentration in } \mu\text{g/L.}$$

$$C_{CM-avg} = \text{average monthly chlorpyrifos effluent concentration in } \mu\text{g/L.}$$
- ⁸ Average Weekly Effluent Limitation

$$S_{AWEL} = \frac{C_{DW-avg}}{0.14} + \frac{C_{CW-avg}}{0.021} \leq 1.0$$

$$C_{DW-avg} = \text{average weekly diazinon effluent concentration in } \mu\text{g/L.}$$

$$C_{CW-avg} = \text{average weekly chlorpyrifos effluent concentration in } \mu\text{g/L.}$$
- ⁹ Applied as an annual average effluent limitation.
- ¹⁰ Applicable at Discharge Point 001 only.
- ¹¹ Applied as a 7-day median effluent limitation.
- ¹² Not to be exceeded more than once in any 30-day period.

E. Interim Effluent Limitations – Not Applicable

F. Land Discharge Specifications – Not Applicable

G. Recycling Specifications – Not Applicable

V. RATIONALE FOR RECEIVING WATER LIMITATIONS

A. Surface Water

1. CWA section 303(a-c), requires states to adopt water quality standards, including criteria where they are necessary to protect beneficial uses. The Central Valley Water Board adopted water quality criteria as water quality objectives in the Basin Plan. The Basin Plan states that “[t]he numerical and narrative water quality objectives define the least stringent standards that the Regional Water Board will apply to regional waters in order to protect the beneficial uses.” The Basin Plan includes numeric and narrative water quality objectives for various beneficial uses and water bodies. This Order contains receiving surface water limitations based on the Basin Plan numerical and narrative water quality objectives for ammonia, bacteria, biostimulatory substances, color, chemical constituents, dissolved oxygen, floating material, oil and grease, pH, pesticides, radioactivity, suspended sediment, settleable substances, suspended material, tastes and odors, temperature, toxicity, turbidity, and electrical conductivity.

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B. Groundwater

1. The beneficial uses of the underlying groundwater are municipal and domestic supply, industrial service supply, industrial process supply, and agricultural supply.
2. Basin Plan water quality objectives include narrative objectives for chemical constituents, tastes and odors, and toxicity of groundwater. The toxicity objective requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants, animals, or aquatic life. The chemical constituent objective states groundwater shall not contain chemical constituents in concentrations that adversely affect any beneficial use. The tastes and odors objective prohibits taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses. The Basin Plan also establishes numerical water quality objectives for chemical constituents and radioactivity in groundwaters designated as municipal supply. These include, at a minimum, compliance with MCLs in Title 22 of the CCR. The bacteria objective prohibits coliform organisms at or above 2.2 MPN/100 mL. The Basin Plan requires the application of the most stringent objective necessary to ensure that waters do not contain chemical constituents, toxic substances, radionuclides, taste- or odor-producing substances, or bacteria in concentrations that adversely affect municipal or domestic supply, agricultural supply, industrial supply or some other beneficial use.
3. The Discharger currently discharges secondary treated wastewater to the disposal ponds. Groundwater limitations are required to protect the beneficial uses of the underlying groundwater. As discussed in section III.E.1 of this Fact Sheet, groundwater monitoring results do not indicate a degradation in groundwater quality when compared to applicable water quality objectives.

VI. RATIONALE FOR PROVISIONS

A. Standard Provisions

Standard Provisions, which apply to all NPDES permits in accordance with 40 C.F.R. section 122.41, and additional conditions applicable to specified categories of permits in accordance with 40 C.F.R. section 122.42, are provided in Attachment D. The Discharger must comply with all standard provisions and with those additional conditions that are applicable under 40 C.F.R. section 122.42.

Sections 122.41(a)(1) and (b) through (n) of 40 C.F.R. establish conditions that apply to all state-issued NPDES permits. These conditions must be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to the regulations must be included in the Order. Section 123.25(a)(12) of 40 C.F.R. allows the state to omit or modify conditions to impose more stringent requirements. In accordance with 40 C.F.R. section 123.25, this Order omits federal conditions that address enforcement authority specified in 40 C.F.R. sections 122.41(j)(5) and (k)(2) because the enforcement authority under the Water Code is more stringent. In lieu of these conditions, this Order incorporates by reference Water Code section 13387(e).

B. Special Provisions

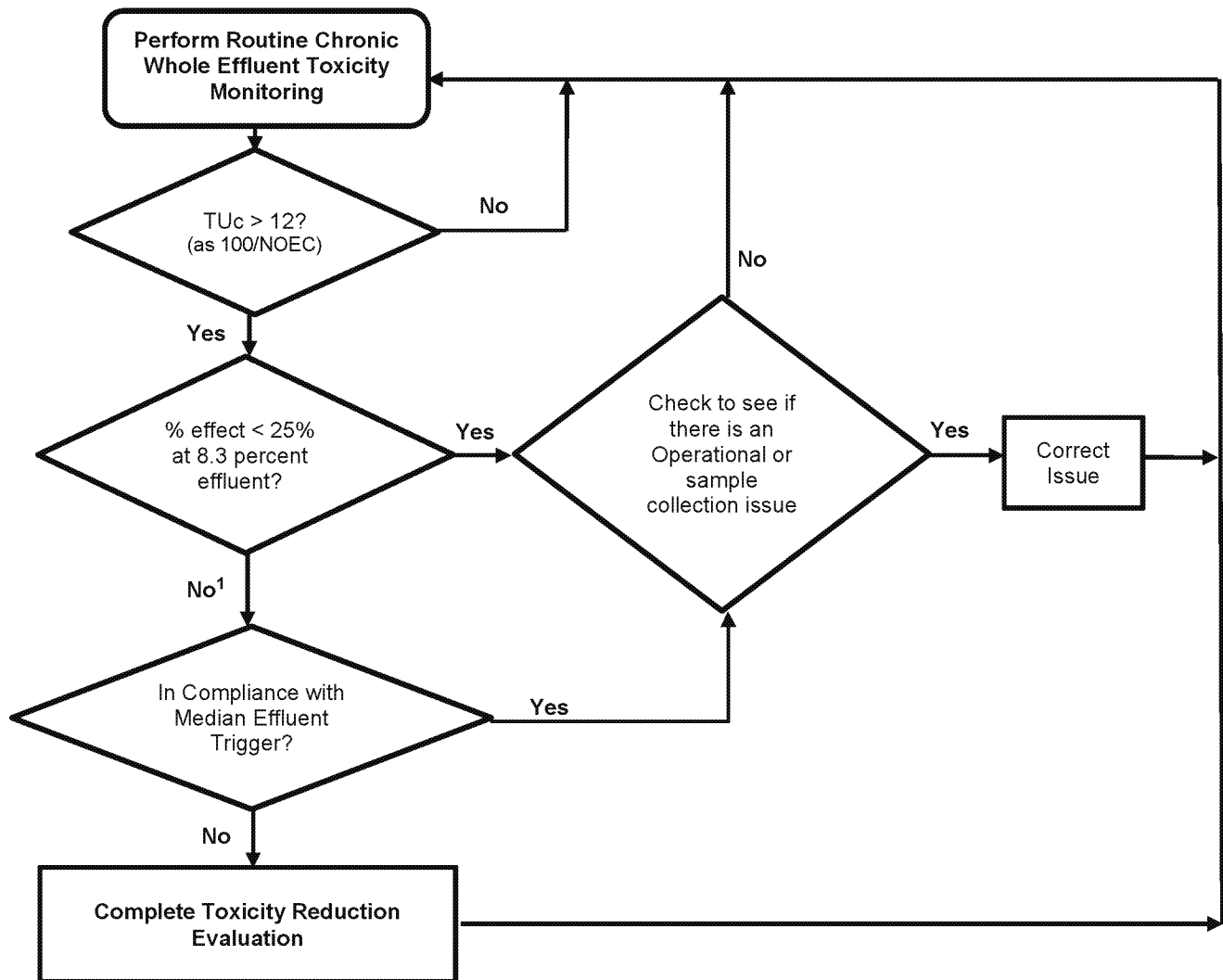
1. Reopener Provisions

- a. **Mercury.** This provision allows the Central Valley Water Board to reopen this Order in the event mercury is found to be causing toxicity based on acute or chronic toxicity test results, or if a TMDL program is adopted. In addition, this Order may be reopened if the Central Valley Water Board determines that a mercury offset program is feasible for dischargers subject to NPDES permits.

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- b. **Whole Effluent Toxicity.** This Order requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity through a site-specific Toxicity Reduction Evaluation (TRE). This Order may be reopened to include a new chronic toxicity limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE and/or TES. Additionally, if the State Water Board adopts statewide toxicity provisions that establish numeric water quality objectives for acute and chronic toxicity and a program of implementation to control toxicity, this Order may be reopened to implement the new provisions
 - c. **Water Effects Ratio (WER) and Metal Translators.** A default WER of 1.0 has been used in this Order for calculating criteria for applicable inorganic constituents. In addition, default dissolved-to-total metal translators have been used to convert water quality objectives from dissolved to total recoverable. If the Discharger performs studies to determine site-specific WERs and/or site-specific dissolved-to-total metal translators, this Order may be reopened to modify the effluent limitations for the applicable inorganic constituents.
 - d. **Central Valley Salinity Alternatives for Long-Term Sustainability (CV-SALTS).** On 31 May 2018, as part of the CV-SALTS initiative, the Central Valley Water Board approved Basin Plan Amendments to incorporate new strategies for addressing ongoing salt and nitrate accumulation in the Central Valley. If approved by the State Water Board, the Office of Administrative Law, and U.S. EPA, the Amendments would impose certain new requirements on salt and nitrate discharges. If the Amendments ultimately go into effect, this Order may be amended or modified to incorporate any newly-applicable requirements.
 - e. **Drinking Water Policy.** On 26 July 2013 the Central Valley Water Board adopted Resolution No. R5-2013-0098 amending the Basin Plan and establishing a Drinking Water Policy. The State Water Board approved the Drinking Water Policy on 3 December 2013. This Order may be reopened to incorporate monitoring of drinking water constituents to implement the Drinking Water Policy.
2. **Special Studies and Additional Monitoring Requirements**
- a. **Chronic Whole Effluent Toxicity Requirements.** The Basin Plan contains a narrative toxicity objective that states, “*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*” (Basin Plan at Section 3.1.20.) As discussed in section IV.C.5.b of this Fact Sheet, based on whole effluent chronic toxicity testing performed by the Discharger during the term of Order R5-2013-0094-01, the discharge does not have reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan’s narrative toxicity objective.
- The Monitoring and Reporting Program of this Order requires chronic WET monitoring to demonstrate compliance with the Basin Plan’s narrative toxicity objective. If the discharge exceeds the chronic toxicity monitoring trigger this provision requires the Discharger to conduct a site-specific TRE.
- See the WET Monitoring Flow Chart (Figure F-2), below, for further clarification of the decision points for determining the need for TRE initiation.

Figure F-2
WET Accelerated Monitoring Flow Chart



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¹ The Discharger may elect to take additional samples to determine the 3-sample median. The samples shall be collected at least one week apart and the final sample shall be within 6 weeks of the initial sample exhibiting toxicity.

- b. **Low Dissolved Oxygen Assessment.** Oxygen demanding substances, including carbon and nitrogen compounds, present in receiving waters are oxidized by microorganisms (bacteria and algae) resulting in the consumption of oxygen from the water column. If sufficient quantities of oxygen demanding substances are present in the water column, the rate of oxygen consumption may be greater than the reaeration of oxygen from the atmosphere and the dissolved levels drop in the water column. The Facility is a POTW that treats domestic wastewater but does not currently nitrify. Untreated domestic wastewater contains ammonia and, without nitrification and denitrification, ammonia is present in the effluent discharge. Ammonia is known to cause toxicity to aquatic organisms in surface waters. To further determine the effects of the ammonia discharge and potential low dissolved oxygen levels in the receiving water, the Central Valley Water Board is requiring a Low Dissolved Oxygen Assessment as specified in Special Provision in section VI.C.2.b of this Order. The Central Valley Water Board is aware that a Low Dissolved Oxygen Assessment is not feasible with the current diffuser location and discharge prohibition since the critical low dissolved oxygen levels would occur in the Feather River in the warm months when the discharge is routed to the ponds. Therefore, the Central Valley Water Board is postponing the Low Dissolved Oxygen Assessment until after the Discharger installs the proposed diffuser in its new location. The Low Dissolved Oxygen Assessment shall include at minimum modeling of a dissolved oxygen sag curve possibly created by the discharge and a comparison of varied ammonia concentrations effect on the dissolved oxygen sag curve.

- c. **Antidegradation Analysis.** As discussed in section II.E of this Fact Sheet, the Discharger is proposing to install a new diffuser at a location downstream of the current discharge from Discharge Point 001. Due to the restrictions on effluent discharges at Discharge Point 001 in this Order (i.e., when the depth over the diffuser is greater than an average of 0.8 feet), the Discharger's primary means of disposal is currently discharge to the ponds at Discharge Point 002. Upon completion of the new outfall, the direct discharge of secondary treated wastewater to the Feather River will be the Discharger's primary method of disposal. The Discharger also plans to request new aquatic life and human health mixing zones for the new outfall location.

The State Antidegradation Policy requires that high quality waters be maintained until it has been demonstrated that any change will be consistent with the maximum benefit to the people of the State, will not unreasonably affect beneficial uses, and will not result in water quality less than that prescribed in the policies. It further requires that any activity that may lower water quality meet BPTC. The proposed discharge of secondary wastewater from the new diffuser and authorization of new mixing zones and dilution credits have the potential to lower the existing high quality of the Feather River. Therefore, this Order requires the Discharger to conduct a complete antidegradation analysis in accordance with State Water Board Administrative Procedures Update (APU) No. 90-004, *Antidegradation Policy Implementation for NPDES Permitting*.

3. Best Management Practices and Pollution Prevention

- a. **Salinity Evaluation and Minimization Plan.** An Evaluation and Minimization Plan for salinity is required to be maintained in this Order to ensure adequate measures are developed and implemented by the Discharger to reduce the discharge of salinity to Feather River. This Order includes a calendar annual average performance-based electrical conductivity (EC) trigger of 800 µmhos/cm to ensure

salinity levels do not increase. If the calendar annual average effluent EC exceeds 800 $\mu\text{mhos/cm}$, the Discharger is required to re-evaluate the Salinity Evaluation and Minimization Plan and submit an updated plan by 1 April following the calendar year of the exceedance. The performance-based effluent EC trigger was calculated based on the maximum calendar annual average from the dataset of daily effluent samples for the calendar years 2014 through 2017, with 15 percent increase to account for water conservation.

4. Construction, Operation, and Maintenance Specifications

- a. **Treatment Pond Operating Requirements.** Order R5-2003-0085 did not originally exempt the disposal ponds from the 100-year flood protection provision; however, the State Water Board WQO 2004-0013 remanded the permit and indicated that an exception to the provision was appropriate pending completion of a disposal pond study analyzing if discharges from the pond cause exceedances of water quality objectives, effluent limitations, or receiving water limitations. The Discharger submitted a 23 October 2008 Disposal Pond Study that concluded that the effluent limitations established in Order R5-2007-0134-01 for discharges to the ponds are protective of water quality objectives when the ponds are inundated. Although evaporation does increase constituent concentrations within the ponds, the significant amounts of dilution available during flood stages reduces the constituent concentrations when the ponds are inundated. Based on the study conclusions, the Central Valley Water Board concurs that that effluent limitations established for discharges to the ponds are protective of water quality objectives when the ponds are inundated. Therefore, consistent with Orders R5-2007-0134-01 and R5-2013-0094-01, this Order requires that the treatment, storage, and disposal facilities be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency except for ponds located within the Feather River levees.
- b. **Diffuser Maintenance Requirements.** As discussed under Section IV.C.2.c of this Fact Sheet, the dilution credits provided for the discharge from the Facility are based on the modeling analysis performed by the Discharger and the current conditions of the diffuser. To ensure that the assumptions under which the Central Valley Water Board has approved the dilution credits used to derive effluent limitations are representative of actual conditions, this Order requires annual reporting on the operational condition of the diffuser and the maintenance that has taken place to assure it is operating properly.
- c. **Disposal Pond Operating Requirements.** The operation and maintenance specifications for the disposal ponds are necessary to protect the beneficial uses of the groundwater. In addition, reporting requirements related to use of the disposal ponds are required to monitor their use and the potential impact on groundwater.

5. Special Provisions for Publicly-Owned Treatment Works (POTW's)

- a. **Pretreatment Requirements**
 - i. 40 C.F.R. section 403.8(a) requires POTW's with a total design flow greater than 5 MGD and receiving pollutants that pass through or interfere with the operation of the POTW to establish a POTW Pretreatment Program. The Discharger has a design flow of 10.5 MGD and receives discharges from six non-categorical significant industrial users. Therefore, the Discharger is required to implement a pretreatment program.

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- ii. The federal CWA section 307(b), and federal regulations, 40 C.F.R. part 403, require publicly owned treatment works to develop an acceptable industrial pretreatment program. A pretreatment program is required to prevent the introduction of pollutants, which will interfere with treatment plant operations or sludge disposal, and prevent pass through of pollutants that exceed water quality objectives, standards or permit limitations. Pretreatment requirements are imposed pursuant to 40 C.F.R. part 403.
- iii. The Discharger shall implement and enforce its approved pretreatment program and is an enforceable condition of this Order. If the Discharger fails to perform the pretreatment functions, the Central Valley Water Board, the State Water Board or U.S. EPA may take enforcement actions against the Discharger as authorized by the CWA.
- b. **Sludge/Biosolids Treatment or Discharge Specifications.** Sludge in this Order means the solid, semisolid, and liquid residues removed during primary, secondary, or advanced wastewater treatment processes. Solid waste refers to grit and screening material generated during preliminary treatment. Residual sludge means sludge that will not be subject to further treatment at the wastewater treatment plant. Biosolids refer to sludge that has been treated and tested and shown to be capable of being beneficially and legally used pursuant to federal and state regulations as a soil amendment for agricultural, silvicultural, horticultural, and land reclamation activities as specified under 40 C.F.R. part 503. This Order does not regulate offsite use or disposal of biosolids, which are regulated instead under 40 C.F.R. part 503; administered by U.S. EPA. The Sludge/Biosolids Treatment or Discharge Specifications in this Order implement the California Water Code to ensure sludge/biosolids are properly handled onsite to prevent nuisance, protect public health, and protect groundwater quality.
- c. **Resource Recovery from Anaerobically Digestible Material.** Some POTWs choose to accept organic material such as food waste, fats, oils, and grease into their anaerobic digesters for co-digestion to increase production of methane and other biogases for energy production and to prevent such materials from being discharged into the collection system, which could cause sanitary sewer overflows. The California Department of Resources Recycling and Recovery has proposed an exemption from requiring Process Facility/Transfer Station permits where this activity is regulated under waste discharge requirements or NPDES permits. The proposed exemption is restricted to anaerobically digestible material that has been prescreened, slurried, and processed/conveyed in a closed system to be co-digested with regular POTW sludge. The proposed exemption requires that a POTW develop Standard Operating Procedures for the proper handling, processing, tracking, and management of the anaerobically digestible material before it is received by the POTW.

Standard Operating Procedures are required for POTWs that accept hauled food waste, fats, oil, and grease for injection into anaerobic digesters. The development and implementation of Standard Operating Procedures for management of these materials is intended to allow the California Department of Resources Recycling and Recovery to exempt this activity from separate and redundant permitting programs. If the POTW does not accept food waste, fats, oil, or grease for resource recovery purposes, it is not required to develop and implement Standard Operating Procedures.